United States of America

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.6: to consider regulatory measures to protect feeder links (Earth-to-space) for the mobile satellite service, which operate in the band 5, 150-5 250 MHz, taking into account the latest ITU-R Recommendations (for example, Recommendations ITU-R S.1426, ITU-R S.1427 and ITU-R M.1454);

Background Information: The proliferation of transmitters in the fixed and mobile services providing applications such as Radio Local Area Networks (RLANs) and other license exempt applications could cause interference to the feeder uplinks of non-GSO mobile satellite service systems, operating in the fixed satellite service. Regulatory measures must be considered to protect these links from interference.

The band 5 150-5 250 MHz is allocated on a primary basis to the FSS and its use is limited to non-GSO MSS feeder links by footnote 5.447A. This band is also allocated by footnote 5.447 to the mobile service (MS) on a co-primary basis in 27 countries in Regions 1 and 3 subject to 9.21 (see Recommendation ITU-R M.1454). Administrations are currently considering the introduction of fixed and mobile services in the band 5 150-5250 MHz on a national and license exempt basis without a requirement to coordinate their usage with other services in the band.

At WRC-2000, Resolution 1156 called for studies by the ITU-R leading to technical and operational recommendations to facilitate sharing between existing services and fixed and mobile services, including RLANs in the bands 5 150-5 350 MHz and 5 470-5 725 MHz. These studies will show that allocation to fixed and mobile transmitters, in 5 150-5 250 MHz, can, with appropriate constraints, protect incumbent non-GSO MSS feeder links and aeronautical radionavigation service systems.

During the 1998-2000 study period, considerable time and effort was spent on the development of three ITU-R recommendations addressing this topic.

Recommendation ITU-R M.1454, "EIRP Density Limit and Operational Restrictions for RLANs or Other Wireless Access Transmitters in order to Ensure the Protection of Feeder Links of Non-Geostationary Systems in the Mobile Satellite Service in the Frequency Band 5 150-5 250 MHz," calls for implementers of wireless access systems to limit the EIRP density of such transmitters to 10mW in any 1 MHz, operate these transmitters only indoors and ensure that the aggregate emissions of these transmitters do not exceed the power flux density limit given in Recommendation ITU-R S.1426.

The protection of MSS feeder links from wireless access system emissions is treated in two Recommendations. Recommendation ITU-R S.1426, entitled "Aggregate Power Flux Density Limits at the FSS Satellite Orbit for Radio Local Area Network (RLAN) Transmitters Operating in the 5 150-5 250 MHz Band Sharing Frequencies with the FSS (RR No. 5.447A)" imposes an aggregate power flux density limit on fixed and mobile services equal to:

$$-124 - 20 \log10 (h_{sat} /1414) \text{ dB}(W/m^2 / 1 \text{ MHz})$$

where h_{sat} is the altitude of the spacecraft in kilometers. This limit is for the protection of FSS satellites using full earth coverage receive antenna beams.

Recommendation ITU-R S.1427, "Methodology and Criterion to Assess Interference from Radio Local Area Network (RLAN) Transmitters to Non-GSO MSS Feeder Links in the Band 5 150-5 250 MHz," specifies that interference from RLAN transmitters should be assessed on the basis of an increase in ΔT_{sat}, the satellite receiver noise temperature, and, to ensure protection, this increase should be no greater than 3%. A Note to the Recommendation indicates that the interference absorbed by the satellite system should not lead to a reduction in capacity of more than 1%.

Unconstrained deployment of fixed and mobile service applications could cause unacceptable levels of interference into the feeder uplinks of the non-GSO MSS. Appreciating this fact, WRC-2000 developed agenda item 1.6 for WRC-2003, which calls for the consideration of regulatory measures to protect the FSS (Earth-to-space) allocation in the band 5 150-5 250 MHz from RLAN interference.

Proposal:

USA/ /1
ADD

5.447x In order to protect the non-GSO MSS feeder links (Earth-to-space) in 5 150-5 250 MHz from interference caused by devices and stations in the fixed and mobile services, the following measures shall be taken:

i) these devices shall be limited to a maximum average e.i.r.p. of 23 dBm and a maximum average e.i.r.p. spectral density of 10 dBm in any 1 MHz;

ii) these devices shall be limited to indoor applications only;

iii) for signals with occupied bandwidths of 1 MHz or less, the e.i.r.p. spectral density, in the occupied bandwidth B in MHz, shall not exceed 10 dBm + $10\log_{10}$(B) (dBm/B MHz);

Reasons: To provide reasonable regulatory measures for the protection of MSS feeder links (Earth-to-space) from interference from mobile and fixed transmitters while not unduly burdening the growth of those services.

USA/ /2
ADD

5.447y Administrations should take into account the provisions of Recommendation ITU-R S.1426 for the protection of non-GSO MSS feeder links (Earth-to-space) in the 5 150-5 250 MHz band.

Reasons: To provide reasonable regulatory measures for the protection of MSS feeder links (Earth-to-space) from interference from mobile and fixed transmitters while not unduly burdening the growth of those services.

USA/ /3
MOD

5 150-5 250 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 150-5 250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE SERVICE (Earth-to-space) 5.447A 5.446 5.447 5.447B 5.447C **ADD** 5.447x 5.447y	

Reasons: Consequential